



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: SOMERVILLE, Robin B.; FAN, Liang-Tseng

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EXAMINER: Johnson, J.D.

TITLE: PROCESS FOR MODIFYING COAL SO AS TO REDUCE SULFUR EMISSIONS

AMENDMENT "C"

Director of the U.S. Patent
and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action of June 15, 2005, a response being due with a two month extension of time by November 15, 2005, please amend the above-identified application as follows:

Amendment A: CLAIM AMENDMENTS

Please cancel Claims 40 - 58 and substitute Claims 59 - 74 therefor as follows:

Claims 1 - 39 (canceled by an earlier amendment).

Claims 40 - 58 (canceled herein).

59. (new) A method of utilizing a coal product having reduced sulfur emissions comprising:

grinding a raw coal material into a coal powder having a desired particle size;
blending said coal powder with fresh hydrated lime having a moisture of no

more than 5% by weight in a vessel so as to spontaneously form pellets of coal and fresh hydrated lime, said fresh hydrated lime being generally unexposed to atmospheric carbon dioxide;

adding water to the pellets of coal powder and fresh hydrated lime in the vessel so as to have a moisture content of between 10 and 30 weight percent of the total weight of the water-added pellets;

drying the water-added pellets so as to have a desired moisture content; and injecting the dried pellets into a combustion chamber.

60. (new) The method of Claim 59, said coal powder having a particle size of between 80 and 20 meshes.

61. (new) The method of Claim 60, said coal powder having an average particle size of 40 meshes.

62. (new) The method of Claim 59, said fresh hydrated lime being of a particle form.

63. (new) The method of Claim 62, said particle form of said fresh hydrated lime having an average size of less than 10 percent of said desired particle size of said coal powder.

64. (new) The method of Claim 59, said step of blending comprising:
blending said fresh hydrated lime with said coal powder in which said fresh hydrated lime is 1 to 15 weight percent of the weight of said coal powder.

65. (new) The method of Claim 59, said step of adding water comprising:
immediately adding water to the pellets such that the pellets become an intimately mingled mixture of said coal powder and said fresh hydrated lime.

66. (new) The method of Claim 59, said desired moisture content being less than 1 weight percent.

67. (new) The method of Claim 59, said step of drying comprising:
passing the water-added pellets from said vessel to an externally heated oven without exposing the water-added pellets to carbon dioxide.
68. (new) The method of Claim 67, said step of drying further comprising:
heating the water-added pellets to a temperature of between 300 and 400°F.
69. (new) The method of Claim 68, said step of heating comprising:
heating the water-added blend from waste heat from said combustion chamber.
70. (new) The method of Claim 67, said step of drying further comprising:
preheating the water-added pellets prior to passing the water-added pellets into said externally heated oven.
71. (new) The method of Claim 59, the raw coal material having a sulfur content of approximately 3% of a total weight of the raw coal material, said fresh hydrated lime being between 5 to 6 weight percent of the total weight of the raw coal material.

73. (new) A method of manufacturing a coal product having reduced sulfur emissions comprising:

grinding coal into a powder having a particle size of between 80 and 20 meshes;

blending the coal powder with fresh hydrated lime with a moisture content of 5% or less in which the fresh hydrated lime is between 1 to 15 weight percent of the weight of the powder, said fresh hydrated lime being unexposed to carbon dioxide;

adding water to the pellets so that the pellets have a moisture content of between 10 and 30 weight percent of the total weight of the pellets, said powder and said fresh hydrated lime and said water being in a container; and

heating the water-added pellets to a temperature of between 300 and 400°F in said enclosed container so as to dry the pellets to a moisture content of less than 1 weight percent, said steps of grinding and blending spontaneously forming the pellets and adding the water and heating being in a continuous process.

73. (new) The method of Claim 72, said coal having a sulfur content of no less than 3 weight percent of the total weight of the coal.

74. (new) The method of Claim 72, said fresh hydrated lime being between 5 to 6 weight percent of the total weight of the powder.